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Abstract

A survey of cow sales was conducted in the fall of 1986 and spring of 1987 at seven Kansas cattle auctions. Several factors significantly influenced cow prices, including health, estimated dressing percentage, lot size, breed, and time of sale. Changes in dressing percentage explained the major portion of cow price variation.

Keywords

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The Effect of Physical Characteristics on Cow Price Differentials in Kansas[1]

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Summary

A survey of cow sales was conducted in the fall of 1986 and spring of 1987 at seven Kansas cattle auctions. Several factors significantly influenced cow prices, including health, estimated dressing percentage, lot size, breed, and time of sale. Changes in dressing percentage explained the major portion of cow price variation.

Introduction

Knowledge of the effect of physical characteristics on cow prices may influence cow-calf producers' management of cull cows. The objective of this study was to identify the physical characteristics of cows that have a significant impact on cow price and measure those price impacts.

Experimental Procedures

Seven cattle auctions in Kansas were surveyed for 6 weeks in the fall (October 31 to December 13) of 1986 and 5 weeks in the spring (March 19 to April 15) of 1987. 7,105 cows were evaluated. The auctions surveyed were in Dodge City, Fort Scott, Manhattan, Parsons, Pratt, Russell, and Salina. The cows were evaluated for health, grade, dressing percentage, weight, price, lot size, and time sold. Prices were adjusted for both the market location and sale date. The interactions among various characteristics was accounted for via interaction terms in the multiple regression analysis. This analytical approach made it possible to evaluate the economic impact of individual characteristics, independent of the cows' other attributes.

Results and Discussion

A larger percentage of cows (66%) was sold in the fall compared to the spring (34%). The average cow in the spring of 1987 sold for $9.34/cwt. more than the average cow in the fall of 1986 (Table 22.1). On average, the cows were thinner in the spring than the fall, as shown by cow grade. Cow grades of 1 and 2 are canner and cutter cows. Grade 3 are utility boning cows, and Grade 4 are utility breaker and commercial cows. The base cow was defined as healthy, grade 3, Hereford, weighing 969 lbs., with a dressing percentage of 45, and sold during the first quarter of the sale.

[1]We gratefully acknowledge the data collection assistance of Garth Boyd, Jeff Davidson, Al Dinkel, Terry Goering, Scott Laudert, and John Requa.

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The seasonal price impact of dressing percentage is reported in Table 22.2. Cows with dressing percentages below 45 sold in the spring received slightly larger price discounts than similar cows sold in the fall. For example, a cow having a dressing percentage of 40 was discounted $2.75/cwt., compared to the base in the spring, whereas this dressing percentage received a $2.60/cwt. discount in fall. The premiums and discounts associated with changes in dressing percentage correspond to the expected change in the cows carcass value. Interestingly, spring-sold cows received smaller premiums than fall-sold cows as their dressing percentage increased above that of the base cow. This fall price premium may be attributable to the increased availability during the fall and winter of surplus forage resources, such as corn or milo stalks, which tends to increase farmers' demand for higher quality cows.

The effects of the interaction between weight and dressing percentage on cow price are the focus of Table 22.3. At low dressing percentages (40%), cows weighing less than 950 pounds were discounted, whereas at high dressing percentages (45 and 50%), light weight cows tended to receive a premium. This transition might be explained by packers effectively discounting the very light weight carcasses expected from light weight cows with low dressing percentages. Premiums and discounts associated with weight differences within a given dressing percentage should be viewed with some caution, since none of the price changes was significantly different from zero ($P>.05$).

Figure 22.1 indicates that increasing lot size had a positive impact on cow price. However, the magnitude of the effect was small. Cows in groups of 12 to 14 sold for $1.30/cwt. more than single cows. Groups of 6 to 8 cows received a premium of more than $1/cwt.

Health-related influences on cow price are in Table 22.4. Cows classified as having bad eyes or exhibiting any growth or protrusion in the eye were discounted. Buyers discounted cows with enlarged briskets (indicative of hardware disease) by over $5/cwt. From a management standpoint, these results suggest that a cow showing any sign of bad eyes, etc., should be sold before her cull value decreases as a result of her physical deterioration.

The premiums attributed to the various breed classifications relative to Herefords are in Table 22.5. Over half of the cows evaluated were in lots classified as Herefords, Angus, or mixed lots of Hereford and Angus. No statistically significant premiums were identified for the Angus or mixed Hereford and Angus lots relative to the Hereford lots, although on average, both groups received a slight premium over Herefords. White-faced cows received statistically significant, but small, premiums over Herefords, whereas exotic cross cows received premiums of $1.30/cwt. to $2.00/cwt. Exotic breed cattle are often heavier muscled than English breed cattle, suggesting somewhat higher meat yields. That factor apparently was bid into the exotic cattle live price. Surprisingly, Brahman cows received a premium over Herefords, with those judged to be less than 1/4 Brahman earning a $1.16/cwt. premium and those having more than 1/4 Brahman blood receiving an average premium of $1.74/cwt. It seems likely that the premium for Brahman cattle reflects their tendency to have somewhat higher dressing percentages than similar cattle of other breeds. Dairy cattle also tend to have higher dressing percentages, which helps explain their slight premium over Hereford cows. Finally, Longhorn cross cows also

received premiums over Hereford cows; an average of $2.30/cwt. Since less than 1% of the cows were identified as Longhorn crosses, their premium could be attributable to a few buyers desiring Longhorn cows for other than slaughter purposes.

Table 22.6 highlights the expected price change resulting from selling cows during different parts of the sale. There was very little difference in the sale price received for cows sold during the first, second, and third quarters of the sale, but cows sold in the fourth quarter, after 8 p.m., received a statistically significant discount of $1.48/cwt. These results suggest that the time of a cow's sale has little impact on price received, unless the cow is sold so late that many potential buyers have already left.

Conclusions

This study implies that cow-calf producers interested in improving the prices they receive for their cull cows should consider several management practices: 1) bunch cows to increase lot size, 2) sell cows before eye problems, etc., reduce their value, and 3) feed some of the lighter-weight cows to increase their weight.

Table 22.1. Averages for Selected Cow Data from Spring and Fall Auctions

Item	Spring Average	Fall Average
Price	$42.50/cwt.	$33.16/cwt.
Weight	971.11 lbs.	967.82 lbs.
Estimated Dressing percent	44.38	45.09
Grade[a]	2.31	2.57

[a]Grade is coded as very thin = 1, thin = 2, average = 3, fat = 4.

Table 22.2. Effects of Season and Dressing Percentage on Cow Price Differential at Auctions (adjusted to grade 3, 969 lbs.)

Dressing Percent	Percent of Cows	Spring ($/wt)	Fall ($/wt)
40 & under[a]	11.2	-2.75*	-2.60*
41-43[b]	7.7	-1.70*	-1.65*
44-46[b]	11.9	Base	Base
47-49[b]	7.9	1.87*	1.93*
50 & over[c]	8.9	3.20*	3.37*

[a]Price change calculated for dressing percent of 40.
[b]price change calculated for midpoint of the range, e.g., 41-43 calculated for a dressing percent of 42.
[c]Price change calculated for dressing percent of 50.
*Indicates significantly different from zero at the .05 level.

Table 22.3. Effects of Weight and Dressing Percentage on Grade 3 Cow Price Differential at Auctions

Weight	Percent of Cows	Dressing Percentage		
		40	45	50
699 & Under[a]	4.4	-0.91	1.02	NA
700 - 799[b]	11.0	-0.58	0.60	NA
800 - 899[b]	20.7	-0.28	0.26	0.79
900 - 999[b]	24.0	Base	Base	Base
1000 - 1099[b]	19.1	0.25	-0.17	-0.60
1100 - 1199[b]	11.4	NA	-0.27	-0.86
1200 & Over[c]	9.5	NA	-0.28	-1.22

[a]Price change calculated for a weight of 650.

[b]Price change calculated for the midpoint of the range, e.g., 900-999 lbs. is for a 950 lb. cow.

[c]Price change calculated for a weight of 1250.

NA indicates insufficient observations available for calculation.

Table 22.4. Effect of Health Problems on Cow Price at Auctions

Health Problem	Percent of Cows	Price Change ($/cwt.)
Bad Eyes	4.5	-8.99*
Hardware Disease	0.4	-5.33*
Knots	5.0	-3.68*

*Indicates significantly different from zero at the .05 level.

Table 22.5. Effect of Breed Type on Cow Price

Breed	Percent of Cattle	Price Change ($/wt)
Hereford	27.8	Base
Angus	19.6	0.24
Herefords and Angus mixed	7.0	0.35
White face (black or red)	18.5	0.36*
Other English cross	3.4	0.82*
Simmental, Charolais, Gelbvieh and Maine-Anjou	9.6	1.30*
Other Exotic cross	1.7	2.03*
Brahman (less than 1/4)	1.5	1.16*
Brahman (greater than 1/4)	0.3	1.74*
Dairy	5.4	0.79*
Longhorn cross	0.9	2.29*

*Indicates significantly different from zero at the .05 level.

Table 22.6. Effect of Quarter of Sale on Cow Price at Auctions

Quarter of Sale	Percent of Cattle	Price Change ($/cwt.)
1st	66.7	Base
2nd	11.5	0.02
3rd	18.9	-0.08
4th	3.0	-1.48*

*Indicates significantly different from zero at the .05 level.

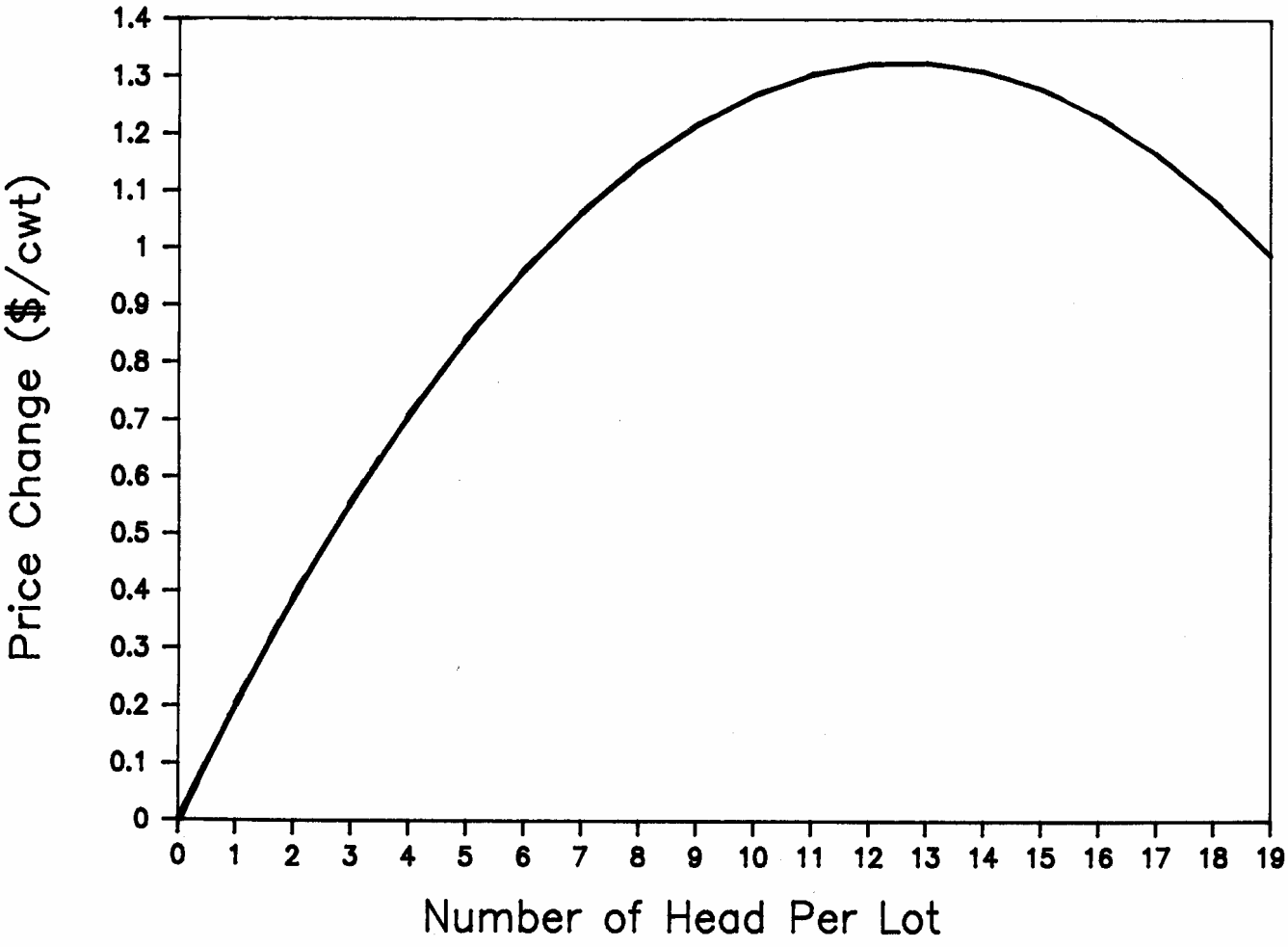

Figure 22.1. Effect of Lot Size on Cow Price